ON SCENE

THE NATIONAL MARITIME SAR REVIEW

NEW FORMAT

With this issue ON SCENE is changing format. Henceforth the periodical will appear in this newsletter style. We will continue to bring you important news from the SAR world but in more concise form than heretofore. Items from the field are still wanted for publication under your byline, but we will have to keep them short or publish them in serial form.

WARNING: DROPPABLE/FLOATABLE SALVAGE PUMPS

In a recent SAR case a droppable/floatable pump kit equipped with female fittings on both the discharge hose and the discharge outlet of the pump was delivered to a distressed vessel. This incident was the result of a discharge hose from an older model pump kit being switched with the discharge hose received with the new (manufactured after April 1973) pump kit.

Until such time as all of the older model pump kits are out of service, units equipped with droppable/floatable pump kits should use caution to avoid the interchanging of non-compatible parts.

LANTSAR 75

As previously announced in this periodical and by other means the Atlantic Air and Surface Search and Rescue Seminar of 1975 (LANTSAR 75) will be held 22 April to 25 April 1975 at the Biltmore Hotel, New York, N. Y. The Seminar is being sponsored by Coast Guard Commander Atlantic Area. Highlights of the expected activites are summarized below.

Tuesday - 22 April
Keynote address---IMCO presentations---Movie: Everglades and Beyond---Luncheon with FAA Administrator as speaker---Workshops (five).

Wednesday - 23 April
Inland SAR presentation---COMSAT demonstration---Space flight SAR presentation ---Recreational boating SAR presentation ---ELT live experiment---Workshops.

Thursday - 24 April
Submersible SAR presentation---AMVER/SARP/CASP presentation---Escape procedures for drill rigs presentation---SAR Medicine panel---Luncheon with a NASA Astronaut as guest speaker---Environmental services presentation---Workshops.

Friday - 25 April
Reports of Workshop moderators---Closing remarks by COMLANTAREA---Open house visits to Coast Guard facilities at Governors Island.

ON SCENE is a SAR publication published by the Commandant, U. S. Coast Guard as a source of information concerning current and proposed procedures as well as new developments in SAR. Articles contained herein are non-record and non-directive.

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SAR CASE STUDY

A number of questionable practices turned up by a recent SAR Case Study are worth review. These are as follows:

1. The cabin cruiser which sent a distress message via the marine operator was shifted off the marine operator frequency to 2182 kHz before any positive contact on the latter was obtained. Although the distressed craft was heard on 2182 kHz, two-way communication was not immediately re-established. The manner of shifting frequencies is not in accordance with paragraph 713 of the National SAR Manual which states "shifting of frequencies, which could lead to loss of communications, should be avoided. If a frequency shift is required, firm communication contact should be established on the second frequency before abandoning the first."

2. At the first distress call, the boat gave a position of 3 miles off a point of land. After shifting frequencies, the boat was heard to give position as 42 miles off shore. Later events proved this to be a mistake. It is believed that the actual transmission was "4 to 5 miles" which was heard as 42 miles. Of major significance however is that, although surface craft were dispatched shortly after the first distress message, an aircraft was not launched until over an hour later. By the time it arrived on scene (at the second datum) all communications with the distressed craft were lost. Analysis indicates that, if an aircraft had been launched immediately upon receiving the distress information in the first place it would have proceeded to the first position (the correct one) and probably would have located the boat before it sank.

3. No attempt was made to activate direction finder stations during the period when the cabin cruiser was tansmitting, thus losing an opportunity to confirm one or the other of the positions.

4. The second position, relayed by an 82-footer, of 42 miles off-shore was accepted in the RCC without question even though a different position had been received while in direct contact with the boat. No replay of the tapes was made to check the original position given via the marine operator circut.

AN ELT SAVE

There has been a lot of unhappiness about false alarms transmitted by Emergency Locator Transmitter (ELT) signals. However, the fact that these devices result in some spectacular saves continues to be demonstrated. Witness the following quote:

"I am a pilot for TWA as well as a senior member of the California Civil Air Patrol. While climbing to the southwest out of Denver, Colorado, on TWA's flight 481, I was asked by air traffic control to check out a report of an ELT transmitting in the area.

No missing aircraft report had been filed at the time. After turning to the emergency frequency, I did pick up the ELT's signal. With the cooperation of ATC, I made a 90 degree turn and was able to get a fix on the beacon. When I was directly over the signal, ATC was able to determine my position by radar and my transponder. My position was relayed to the Colorado Civil Air Patrol, and within one hour and thirty five minutes the aircraft was found, with the pilot still alive...." Randy Kramer, Van Nuys, CA.

RADAR REFLECTORS CANADA

Recent Canadian regulations require the ultimate fitting of a passive radar reflector in all non-metallic vessels and in vessels under 65.6 feet in length. Vessels less than 39.9 feet in length will not have to comply with this requirement if the fitting of a reflector is impracticable or is not essential for the safety of such vessels.

While the purpose of the radar reflectors is to assist in avoiding collisions, it is envisaged that they will also assist search and rescue units in locating small vessels.

Phase-in dates are as follows:
Ships other than fishing vessels and pleasure yachts must be fitted by 1 January 1977, and pleasure yachts by 1 January 1978.

A VOLCANO WAITING TO ERUPT

By LCDR Brian Shoemaker

Reprinted with permission from APPROACH Magazine, Issue June 1974.

THE RECOVERY team of a salvage ship had just finished securing a ditched helicopter aboard when the cry *"Fire!"* was heard from the bridge. A small column of smoke was seen billowing from the aircraft's cabin. The fire was quickly extinguished by an alert crewman with a handheld fire extinguisher. After the smoke had cleared, the cabin interior was inspected and pronounced safe. The ship then headed to a nearby NAS pier to unload the helicopter.

When the salvage ship moored, a crane was used to hoist the helo onto an awaiting flatbed. Just as the rigging was being attached to the rotor head, *"Fire!"* was again heard – this time from spectators on the dock. A mech quickly removed a fire bottle from the helo's cabin and put out the fire again.

After two such flareups, the general consensus was that the main battery had caused shorts in the wiring system of the helicopter. The battery was disconnected, and the wreckage hoisted onto the flatbed, then turned over to the mishap board for analysis.

The senior member of the mishap board felt that a more comprehensive investigation could be accomplished at Homebase, some 15 miles away. So, he ordered the wreckage transported there. The flatbed entourage, led by the squadron safety officer in a vehicle with a *WIDE LOAD AHEAD* sign and followed by a car with blinker lights flashing, departed at twilight for Homebase.

The first few miles of their route wandered through a nearby beach resort. Just as they reached the center of town, the cry of *"Fire!"* was sounded for the third time that day. The blaze in the interior of the helo was extinguished, with fanfare, by crewmen who were ready for the emergency. They were armed with a variety of fire extinguishers from the various vehicles in the convoy.

It was then speculated that the auxiliary battery had ruptured and acid was causing the aircraft insulation to ignite. The battery was removed. It was dark by that time, and the personnel involved in transporting the helo were anxious to reach their destination.

Finally, the convoy reached the friendly confines of Homebase, and the flatbed with the helo on it was parked. Someone suggested the helicopter should be defueled in case fire broke out again. A defueler and firetruck were called, and defueling commenced. Once lines had been hooked up, another cry of *"Fire!"* was sounded.

The firemen responded immediately and laid on the fog foam. (They laid it on the defueler, too.) The driver of the defueler tried to drive away, but was held fast by its hoses. A fireman with a handheld extinguisher doused the flames.

While the extinguishing was taking place, one of the members of the accident board drove up in his car with a load of miscellaneous parts that had been left behind. He opened his trunk to unload the parts and discovered flames in his trunk. Again, the fire was put out rapidly by one of the firemen. The car's trunk was inspected, and a piece of insulation was discovered to be the source. The helicopter was then stripped of all insulation which was stored in a barrel of water for the night.

Subsequent investigation at NARF revealed that phosphorus had contaminated the cabin insulation. The only known source of phosphorus within the aircraft would be in the marine markers. It is speculated that these had ruptured or had activated during their submergence (the AAR reported the helo had been down 6 days in 60 feet of water) and contaminated the aircraft interior. As the insulation dried out, some of the phosphorus would spontaneously ignite, be extinguished, then another section of the insulation would dry out and burst into flames again!

The following morning, members of the mishap board, crewmen, handlers, and firefighters were nursing burns on their hands and faces. Luckily, none were seriously injured. *(It is unlikely that their injuries were phosphorus burns since such burns are accompanied by actual fire and smoke and would have been excruciatingly painful after initial skin contamination. It is most likely the burns were from fuel or battery acid. – Ed.)*

Retrospect dictates that there were many unacceptable errors made. The knowledge that most ASW aircraft are loaded with water-activated pyrotechnics is of utmost importance. When these aircraft are salvaged, only experienced crews should be involved in recovery. Special handling procedures must be adhered to. They should include:

- Immediately remove all pyrotechnics from the aircraft under EOD supervision. Inspect each item for rupture or having functioned while the aircraft was submerged.
- If any pyrotechnics containing phosphorus * are suspected to have functioned or ruptured and contaminated the interior of the aircraft, strip all insulation, cushions, and cloth material from the interior of the wreckage and give it special storage treatment.
- Defuel the wreckage as soon as possible – preferably aboard ship if facilities permit.
- Position a ready fire crew until the wreckage is safe.
- Release the wreckage to the mishap board *only* after it is determined to be safe.

In summary, any person involved with salvage operations, rigging, handling, or transportation of a ditched aircraft must remember that immersion may increase fire potential, rather than decrease it! Realization that you could be working with a sleeping volcano waiting to erupt is warning enough.

APPROACH Comment: The unique aspects of this article triggered an investigation to determine the cause of the spontaneous ignition and reignition of the aircraft interior. It was realized, in retrospect, that the helo's batteries would have run down shortly after the aircraft had submerged in saltwater and that the fires were most probably being caused by phosphorus from the marine markers carried on the flight.

The marine markers in the helicopter were Mk-25s and are sea-water battery operated. Although they require arming to expose the sea-water battery before deployment, it is probable that one or more of the markers leaked after the helicopter submerged, then ignited and burned underwater within the cabin.

The composition of the main pyrotechnic charge contains red phosphorus and manganese dioxide as the principal ingredients. Red phosphorus, however, will not spontaneously ignite in air. It is known that red phosphorus can and will partially revert to the white form under certain temperature conditions. Here, then, is the culprit – a pyrotechnic device containing red phosphorus. Any white phosphorus emitted during normal operation will ignite spontaneously in air and burn to completion, leaving little, if any, residue.

When the same device burns underwater (it has its own oxidizer), any white phosphorus emitted cannot burn. If this white phosphorus is trapped inside the aircraft, it will spontaneously ignite as soon as it dries sufficiently. Every aircraft carrying sea-water activated pyrotechnics that contain either red phosphorus or calcium phosphide is, therefore, a volcano waiting to erupt - if the aircraft crashes in water and is later salvaged. If fuel is leaking from the aircraft as it is brought to the surface, the potential for disaster is also there.

Changes to several publications are in process because of this mishap to alert all personnel to the unique hazards associated with pyrotechnic devices containing red phosphorus.

It is suspected, but cannot be proven, that at least two other similar incidents have occurred. One of these incidents resulted in the loss of an aircraft during salvage efforts.

* References:

NAVORD OP 2793; NAVAIR 11-15-8, "Toxic Hazard Associated With Pyrotechnic Devices."

NAVORD OP 2213; NAVAIR 11-15-7, "Pyrotechnic, Screening, and Marking Devices."

INLAND WATERS SAR

Our attention was called to an exceptional water rescue show sponsored by the Coast Guard Auxiliary on Harvey's Lake, Penna. last summer. Leonore K. Youngblood of Auxiliary Flotilla 5-10 sent us the information and picture. Such activity is of vital interest to those concerned with SAR on the inland waters because most of the SAR performed there is done by local or private groups and the Coast Guard Auxiliary.

At least 5,000 persons attended the event and viewed a program which consisted of the following;

rescue by helicopter;
personal flotation devices;
man overboard exercises;
fires and their prevention;
distress signals and devices;
scuba diving;
recovering capsized vessels;
towing vessels;
refloating a vessel aground;
recovering sky divers; and
a water skiing exhibition.

Participating in the show were a Coast Guard helicopter from Brooklyn Air Station; Coast Guard Auxiliary Flotillas 5-90, 5-10 and 5-12; the Civil Air Patrol and a local yacht club.

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